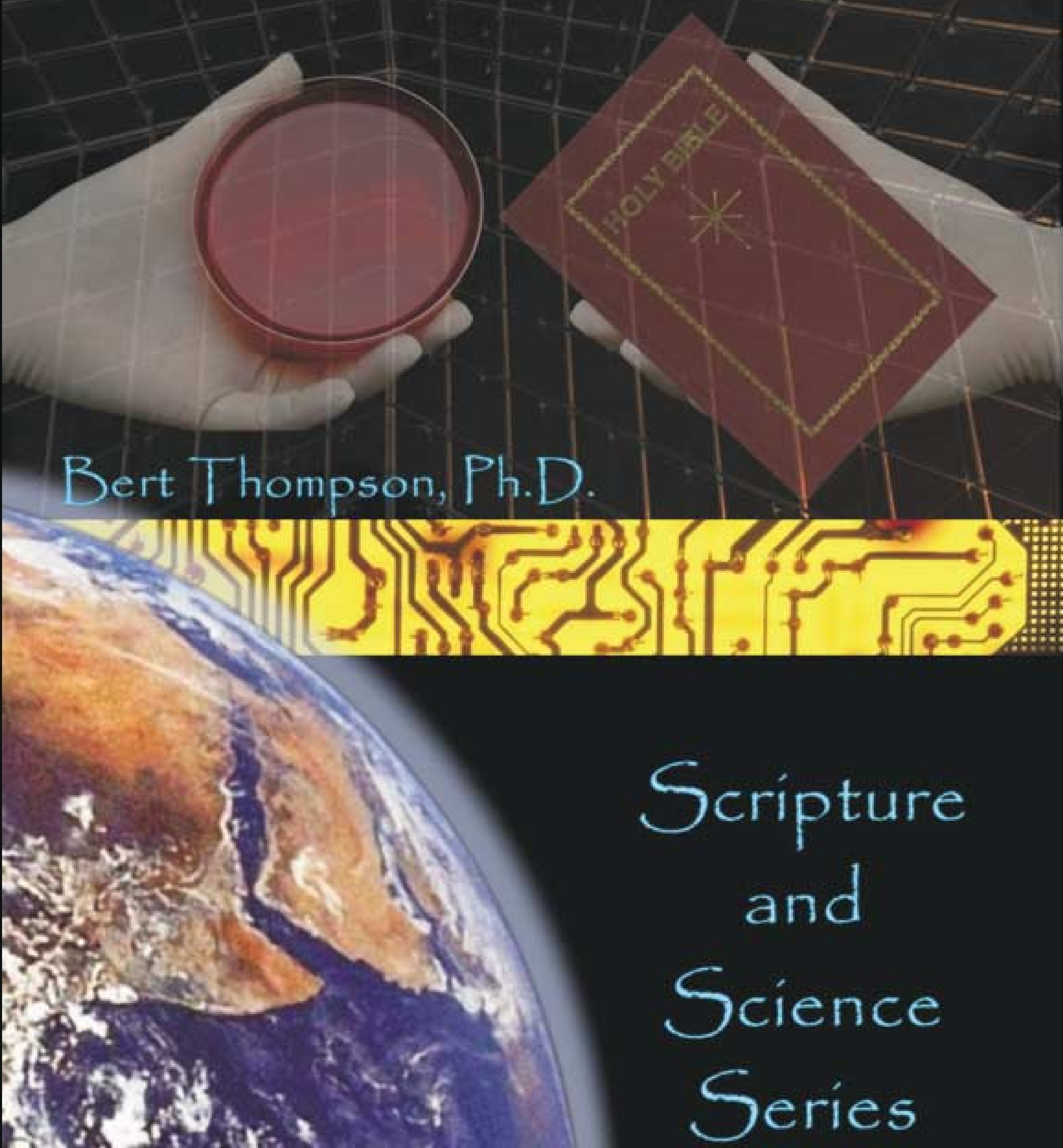
# The Christian and Medical Ethics




Bert Thompson, Ph.D.

Scripture and Science Series

# THE CHRISTIAN AND MEDICAL ETHICS

by

**Bert Thompson, Ph.D.**


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# THE CHRISTIAN AND MEDICAL ETHICS

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## CHAPTER 1

## INTRODUCTION

On April 25, 1953, James Watson and Francis Crick published a scientific paper describing for the first time the intricacies of the DNA molecule. For their attainment, they received the Nobel Prize—and initiated a biological revolution. The elucidation of the molecular biology of the gene clearly ranks among the greatest scientific achievements of all time. Because of this discovery, a new age is dawning—the Genetic Age.

In the opinion of many scientists, the last great revolution in science was the coming of the Nuclear Age. Nuclear technology tends to be viewed as either the most powerful industry for human benefit, or the most dangerous tool for human destruction, ever available for mankind's use. With the development of genetic engineering, the potential for controversy is even greater because in their experiments scientists no longer are dealing with inanimate nature but with **human** subjects, and the consequences are far-reaching indeed. Some have made comparisons between current advances and those that led, little more than a generation ago, to the dropping of the atomic bombs over Nagasaki and Hiroshima. Science fiction writers have created, in the true tradition of Dr. Frankenstein, modern-day monsters ranging from potentially killer microorganisms to exact duplicates of Adolph Hitler. Some among us see the immediate demise of the human race; others see, and tremble before, the prospect of a Huxleyan *Brave New World*-type society that promises the complete and utter dehumanization of mankind. What, then, is the truth of the matter?

Today the citizens of most civilized countries are better fed, better clothed, and healthier than they have ever been. Transportation, educational, medical, industrial, and even recreational facilities are vastly improved compared to those of previous generations. Prospects for the future should be brighter than ever. But are they? There are ominous signs that the future may hold some of the worst of times as well. The truth is that man increasingly desires to be his own "god." The words of the infidel poet, William Ernest Henley, in his famous composition, *Invictus*, reflect the attitude of many in contemporary society—"I am the master of my fate; I am the captain of my soul." The late George Gaylord Simpson, evolutionary scientist of Harvard University, concluded one of his books by saying that man is "his own master. He can and must decide and manage his own destiny" (1953, p. 155). Such a philosophy, if widely accepted, will spell ultimate disaster.

No one knows what the future will hold, but whatever comes, there are growing indications that much of it may not be for good. The irony is that man has become more smug as scientific knowledge has increased. In his egotistical pride, man has drifted farther and farther from God. Humanity progressively attempts to cut itself loose from the moral, ethical, and spiritual guidelines found within God's Word. It is safe to say that the average person of our day knows far less about the Bible than the common man of a half-century ago. What will happen, then, as science accelerates, while man's relationship with and knowledge of his Creator degenerates? The possibilities are staggering. And the frightening thing is that now we are confronting situations we thought only future generations would have to face.

# CHAPTER 2

# GENETIC ENGINEERING—AN OVERVIEW

In the past, genetic engineering generally was looked upon as an area of science dealing with the substitution of new ("improved") genes for old (damaged) ones. But to the man on the street today, it usually means far more than that—like conjuring up ideas of recombinant DNA monsters or cloning world-famous figures such as Stalin or Churchill. In this book, the term is used in its broadest sense to include any form of artificial reproduction or genetic manipulation. The questions I shall attempt to answer are these: (a) how extensive is our current technology; and (b) what should be the Christian's response to that technology?

The motivation behind most human genetic engineering research certainly is commendable. Scientists want to alleviate human suffering by the correction of genetic or behavioral defects, therapeutically control and rehabilitate those who are dangerous to society, and improve the general functioning and future potential of the human race. Few would argue with the goal of helping people function better. Even opponents of human genetic engineering would concede that most scientists are not attempting to be malicious or oligarchical elitists.

We must remember, however, that even scientists are not completely free of the desire for power. Further, some scientists work on the underlying assumptions that suggest: (a) we can do better than nature (or as the Christian would say, better than God); (b) we are responsible to no higher being than ourselves; (c) economic value is the final test in considering what should or should not be done; and (d) the end justifies the means. Clearly, the potential for a very real and very serious problem exists. Should this attitude become dominant, there may be no effective barrier against irresponsible uses of genetic engineering. Thus, the biblical injunction for Christians to be the "salt" of their society (Matthew 5:13) carries tremendous import.

As we examine the ideas and practicalities of genetic engineering, we must distinguish between the various types of genetic research. The first has to do with modification, which involves making minor changes in an existing structure by splicing in new genetic material, or by altering the material already present. Generally, this type of procedure has as its goal the improvement of an organism, or the prevention or cure of disease. Few would oppose such beneficial uses of genetic engineering—if scientists follow proper guidelines.

A second, more controversial type of genetic engineering has to do with the creation of new life forms. Some scientists see the day approaching when we shall go beyond merely small-scale genetic modification to produce more inventive and novel living beings. This is a drastic departure from conferring a specific trait on an existing organism or genetically modifying an organism so as to give it a healthier, longer life. One writer has referred to this as "engineering the engineer," as opposed to "engineering his engine" (Kass, 1971, p. 779). Not surprisingly, there is disagreement in both the scientific and legal communities on the limits that should be imposed regarding the creation of new life forms.

A third type of genetic research relating to both animals and humans centers on procreation. Technology initially available only for use in animals now is available that can allow people to reproduce when previously they were unable to do so. Additionally, technology is available that can prolong, or shorten, a person's life—in keeping with the wishes of that person or his relatives and friends. It is this area of human genetic engineering that engenders most of the discussion about the ethical and moral issues confronting us as we explore these new technologies. Therefore, this is the area that I would like to discuss in the remainder of this book.

## A BRIEF HISTORY OF GENETIC ENGINEERING

Historically, experiments intended to alter human life began in 1970 when Stanford Rogers, a physician and biochemist, attempted to introduce into his patients a gene for production of the enzyme arginase. The patients' systems were incapable of manufacturing the enzyme—a factor that eventually would cause their deaths. Dr. Rogers injected his subjects with a virus that was able to produce the enzyme, in

the hope that the virus would infect their DNA. Subsequently, the host's immune system would destroy the virus, yet leave behind the gene for arginase production. The experiment failed, resulting in a swift and serious outcry of criticism from the scientific community.

In July of 1980, a more extensive experiment was attempted by Martin Cline, then head of hematology and oncology at the University of California at Los Angeles. Working with him was a team of Israeli medical doctors, headed by Eliezer Rachmilewitz of the Hadassah Hospital in Jerusalem. Patients under the care of Dr. Rachmilewitz had a rare but fatal disease known as beta zero thalassemia. Dr. Cline injected their bone marrow with a gene that had been cloned through recombinant DNA technology, in the hope that the new gene would correct the defect in the patients' systems. Such was not to be, however. This experiment failed as well, and cost Dr. Cline his job and research grants. Few in the scientific community, at this early stage in the history of genetic experiments, were willing to put their professional careers on the line. With human lives at stake, the risk was too great. Fewer scientists still were willing to forgive those who tried—and failed.

It appeared, then, that whatever benefits might accrue to humanity from biotechnology would come only indirectly. Indeed, early successes in the field of genetic engineering seemed to confirm that fact. By the early 1980s, business ventures had been formed for the specific purpose of advancing and investing in various kinds of genetic research, the offshoots of which certainly would benefit mankind. Compounds such as interferon, and even human insulin, soon were being produced by genetically altered bacteria. Later, human growth hormone was added to that list. People **were** benefiting, indirectly, from genetic engineering.

By the late 1980s and early 1990s, however, the benefits derived from genetic engineering no longer were indirect. Advances in the field were coming at breakneck speed. Hardly a day passed that scientists from one corner of the globe or another did not announce still another breakthrough that conferred additional genetic blessings on humanity. For example, an article on "Conquering Inherited Enemies" in *Time* magazine announced:

> Genetic engineers at a handful of U.S. laboratories are getting ready to embark on the first trials of human gene therapy, a revolutionary approach to conquering inherited ailments. Employing the subtlest available techniques of recombinant DNA, the scientists will attempt to inject healthy copies of the affected gene into the bone marrow cells of a victim of a genetic disorder. If all goes well, the good genes will begin producing enough of the missing enzyme to cure the disease. That will be cheering news for the hundreds of thousands of patients who suffer from the 3,000 known genetic disorders (Angier, 1985, p. 59).

Five years later, another *Time* article reported about an epochal event surrounding the treatment of a 4-year-old girl.

> Last week, on the 10th floor of the massive Clinical Center of the National Institutes of Health (NIH) in Bethesda, MD., the still unidentified child assumed a historic role. In the first federally approved use of gene therapy, a team of doctors introduced into her bloodstream some 1 billion cells, each containing a copy of a foreign gene. If all goes well, these cells will begin producing ADA, the essential enzyme she requires, and her devastated immune system will slowly begin to recover (Jaroff, 1990, p. 74).

No longer, then, are the potential benefits to humanity from genetic engineering indirect. We have passed the point where people live longer, healthier lives simply because they can take insulin or interferon produced by genetically altered bacteria. Now people themselves are part of the experiments—experiments that, if we are to believe the early reports, may bode well for humanity in both the near and distant future.

## THE BIBLE AND GENETIC ENGINEERING

What shall be the Christian's response to these various situations? How can one know what is right? How is the morality of such practices to be determined? Someone might suggest that "the Bible has the answer." Indeed that is true. The grass withers, the flowers fade, science comes and goes, but the Word of God abides forever (Isaiah 40:8). That Word, which is a complete and perfect source of moral and spiritual information (2 Timothy 3:16-17), is eternally applicable to human needs and problems (2 Peter 1:3).

On occasion, the comment is made that "the Bible is not a science textbook." Those who make such a statement often intend to cast dispersion on various parts of the biblical record for their own self-serving purposes. While it is true that the Bible is not **strictly** a textbook on science (any more than it is strictly a textbook on history, philosophy, etc.), the statement that "the Bible is not a science textbook" leaves the false impression that the scientific information presented between its covers somehow is spurious or flawed. This is not the case.

Whenever the Bible touches upon **any** area of scientific inquiry, one may be sure that it is infallibly accurate, for the same God Who authored nature, which science seeks to study, also authored the sixty-six books of the Bible. Therefore, the two will be in harmony, for God is not the author of confusion, much less contradiction (1 Corinthians 14:33). Those willing to devote the time and effort to a study of the Bible's scientific statements will discover that, far from being spurious or flawed, they always are unfailingly accurate. On numerous occasions, the Bible writers presented scientific foreknowledge that was light-years ahead of its time. In fact, entire books have been written detailing the marvelous scientific accuracy of the Bible (see Morton, 1978; Morris, 1986, Barfield, 1988).

Nevertheless, the matter is not always as simple as saying "the Bible has the answer." Often it is much more difficult to discover **how** the Bible is to be applied to the complex problems of modern society because there are many specifics of science about which the Scriptures do not speak. The Bible does not mention, for example, such things as inoculations, blood transfusions, birth control, genetic engineering, transsexual surgery, artificial insemination, cloning, psychosurgery, etc. How can the morality of these practices (and others like them that are not mentioned in the Bible) be determined?

The solution is that the Word of God must be probed diligently and studied intently for the **principles** that will be applicable to any act. The Bible is a book containing many timeless principles that are intended to serve as guidelines for an infinite variety of specific problems. Scripture does indeed contain the answer(s). But we must now, as never before, study our Bibles with the greatest sense of urgency if we would know how to answer an inquiring world and deal with the challenges that present themselves at our doorstep in increasing numbers every day.

# CHAPTER 3

## THE BIBLICAL ETHICS OF REPRODUCTIVE TECHNOLOGIES

There are four distinct areas in which biblical ethics relevant to human reproductive technologies is of concern: (a) **before** conception; (b) **at** conception; (c) **pre**natally; and (d) **post**natally. I would like to consider the biological and biblical aspects of each of these.

### *BEFORE* CONCEPTION

Before conception, there are three main areas involved in human reproductive technology: (1) contraception; (2) sterilization; and (3) genetic counseling. Of these, the first two fall beyond the scope and intent of the present discussion. However, genetic counseling is a practice that should be mentioned.

Twenty years ago, in 1979, conservative estimates suggested that approximately 5 million couples in the United States could benefit from some form of personal genetic counseling (Ellison, 1979, p. 14). Certainly, with the advanced technology, testing capability, and increased knowledge we now possess, that number has increased drastically. In fact, many people who do not seek such counseling are engaging in what has been called "reproductive roulette" (Fletcher, 1974). But what, exactly, is genetic counseling, and how does it work?

Genetic counseling is a medical specialty that uses the latest information on birth defects and inherited diseases to help people as they strive to plan their families, protect their health, and protect the health of their children. Counselors may be physicians, nurses, or others with special training in genetics. Their goal is to translate up-to-date genetic knowledge into practical, useful information. To date, scientists have isolated over 3,000 genetic defects among humans. For people who may be "at risk" regarding these defects, genetic counseling can play an important part in their decision-making process. Those at risk would include people who have a family history of inherited disease(s), women who have experienced two or more miscarriages, workers whose jobs expose them to a potentially harmful environment, those married to first cousins or other blood relatives, etc.

Some diseases can be detected through genetic screening, among which are the following examples: (a) Tay-Sachs disease (which causes babies to go blind and die); (b) sickle-cell anemia (a fatal blood disease); (c) phenylketonuria (a disease in newborn infants who lack the ability to break down phenylalanine); (d) achondroplasia (a form of dwarfism); and (e) hemophilia ("free-bleeder's" disease). There are, of course, limits, because at present we do not have a simple, reliable test for each genetic disease. And although no one wants to put a price on a human life, scientists are forced to draw a line somewhere in terms of cost versus benefit, due to the lack of available research funds. If a disease (e.g., homocystonuria) occurs only once in every 160,000 people, it often becomes unfeasible economically to test everyone for that disease.

Current statistics indicate that genetic counseling is on the rise. At present, it is offered on a strictly voluntary basis, and I believe it should remain so. Both the counseling and the results are completely confidential and, whatever the results, final decisions are left to those being counseled. However, some couples are being pressured to terminate a pregnancy if the fetus is found to be "defective." This concept is both unethical and unscriptural, and will be discussed at some length later in this book. One of the most popular screening programs (concentrating not on prevention but on early diagnosis and treatment) is for newborn infants. As one lawyer predicted several years ago, "Within the next decade, virtually every newborn in America may be tested for a whole host of genetic diseases" (Reilly, 1976, pp. 55-57).

Scripturally speaking, the choice to have, or not to have, children is left entirely to the potential parents. Scripture makes it clear that we are creatures of freedom of choice (cf. Joshua 24:15; Isaiah 7:16; John 7:17; Revelation 22:17). While it is true that ultimately we are responsible for the choices we make, and for any consequences stemming from them, in this area the Scriptures do not mandate a particular decision regarding the bringing of children into the world. Birth control, for example, certainly is permissible scripturally (see Jackson, 1985). And there is no command given to modern-day man and woman to produce children [the command, given to Adam and Eve to "fill the earth" (Genesis 1:28) is not to be in-

terpreted as a strict command for every married couple, because at that time it involved a specific purpose—i.e., the propagation of the human race through the lineage of Adam and Eve]. A couple may, in keeping with biblical edict, elect not to have children. Especially is this true if there is evidence that the couple might bring into the world a diseased or disabled child. It would be wise stewardship, though admittedly a difficult decision, on the part of the potential parents **not** to have children in such an instance.

## *AT* CONCEPTION

Reproductive technologies at conception usually include: (1) cloning; (2) artificial insemination; or (3) *in vitro* fertilization.

### Cloning

In recent times, there has been a great deal in the news about cloning. The English word "clone" derives from the Greek *klon* (meaning a sprout or twig) and in science refers to an asexual process of reproduction that results in an exact genetic duplicate of the original. Cloning is quite natural for many of Earth's life forms. For example, when the amoeba reproduces by splitting into two parts, it is cloning itself. In essence, then, cloning is a way to grow many identical cells or organisms from a single ancestor. However, most plants and animals reproduce sexually—a process that requires a contribution of genes from both the male and female of the species. Therefore, any attempt to clone such organisms, including humans, must involve sophisticated technology. The science fiction version of cloning uses a body cell (known as a somatic cell) to make a copy of an individual. In the past, cloning of relatively complex creatures, such as mammals, for example, began with an egg, or perhaps even a fertilized egg. Only then could scientists make copies of one unique set of genes.

In one popular technique known as nuclear transfer, an unfertilized egg is harvested from the female and its nucleus either is destroyed (e.g., by radiation) or removed. The nucleus from a body cell then is placed into the egg, which, when implanted in the uterus, behaves as if it has been fertilized—except that all of its genetic information has been derived from a single individual rather than two parents.

This type of cloning possesses potential benefits. Its greatest value, however, is not as an alternative means of reproduction but as a powerful laboratory research tool, especially in developmental biology. Cloning can aid in the study of nuclear differentiation, helping scientists to better understand how an embryonic cell becomes a nerve cell, a blood cell, etc. It also can be very helpful in the study of immunology and organ rejection. Additionally, cloning can be employed with great benefit in medical research. For example, it can be used in the study of cancer, and also can be used in the study of the aging process.

During the 1950s, F.C. Steward of Cornell University demonstrated how to clone plants and produced carrots by the thousands through such a procedure (see Steward, 1970). In 1952, Robert Briggs and Thomas King of the Institute for Cancer Research in Philadelphia cloned a leopard frog (see Briggs and King, 1952). Since then, carrots, tomatoes, fruit flies, and even frogs have been cloned. The successes (and there were many) were the result of painstaking research carried out using embryonic or neonatal somatic cells (viz., non-adult cells). By the late 1970s, scientists lamented that, in spite of numerous attempts in laboratories around the world, "...no one has yet shown that it is possible to clone a mammal by using a body cell nucleus from an adult" (Lygre, 1979, p. 41). Something—no one quite knew what—seemed to make the somatic cell of the adult an unlikely candidate for cloning procedures. However, investigators did not abandon their efforts, and attempts to clone organisms using adult somatic cells continued at an unprecedented pace.

Clement Markert of Yale University perfected a method that allowed researchers to remove one set of chromosomes—either those from the sperm or those from the egg—just after fertilization. Through biochemical means, the remaining set could be made to double, producing an egg with two sets of the sperm's (or egg's) chromosomes. The same number of chromosomes as a fertilized egg then was present and embryonic development could begin. Peter Hope and Karl Illmensee at the Jackson Laboratory in Bar Harbor, Maine employed this technique in mice and produced seven female offspring. While none of the seven was a clone of the genetic parents, if the same procedure were repeated on those seven mice (retaining the chromosomes of their eggs), their offspring would be clones.

The first clones of large animals were produced by S.M. Willadsen (1986), who transferred a single cell from an 8-cell sheep embryo to an unfertilized egg whose nucleus had been destroyed. Three of the four reconstituted embryos transferred to ewes' oviducts developed into genetically identical lambs.

But what about attempts at human cloning? Landrum Shettles reported in the *American Journal of Obstetrics and Gynecology* that he personally had cloned human embryos to the blastocyst stage (the point in early development where the whole embryo has the appearance of a hollow sphere; see Clark, 1979, p. 99). As one writer summarized the experiment:

> According to the report, he had removed the genetic material from a human egg cell and replaced it with the nucleus of a human spermatogonium, the precursor of the sperm cell. Because the spermatogonium contains a double set of chromosomes, it is a complete blueprint for the individual. The egg was fertilized, cell division began, and three days later the embryo was at the morula stage, its cluster of cells ready for implantation. **If the paper was true**, then it meant that the first glimmering of a human being had already been cloned (Kahn, 1988, p. 164, emp. added).

The operative phrase here, of course, is "if the paper was true." Most scientists working in this field did not believe that it was, and remained skeptical of Dr. Shettles' experiment. Why? "Shettles never presented evidence that the egg was enucleated,...nor did he use genetic markers that would have proved that the sole parent of the embryo was indeed the transplanted spermatogonium" (Kahn, 1988, p. 164).

In 1978, science writer David Rorvik authored, and the J.B. Lippincott Company of Philadelphia published, *In His Image: The Clon*ing of a Man. The book reportedly told the story of a 67-year-old eccentric millionaire who had himself cloned successfully, and spawned a serious scientific controversy since it was published as nonfiction. Most scientists dispute claims such as those made by Rorvik and others in regard to the cloning of humans. In its publication, *ASM News*, the American Society for Microbiology stated:

> Four eminent cell biologists have testified before congress that adult cloning of humans has not been and may never be achieved because of biological barriers. They also called David Rorvik's book, *In His Image: The Cloning of a Man*, a fictional work replete with scientific errors (1978, p. 334).

One scientist suggested concerning Rorvik's work: "His book sets new standards for the label 'nonfiction'" (Lygre, 1979, p. 41). In 1981, U.S. District Court judge John Fullam ruled the book to be fiction (Fullam, 1981, p. 2-F) and, several years after its publication, Lippincott publicly acknowledged the book as a hoax.

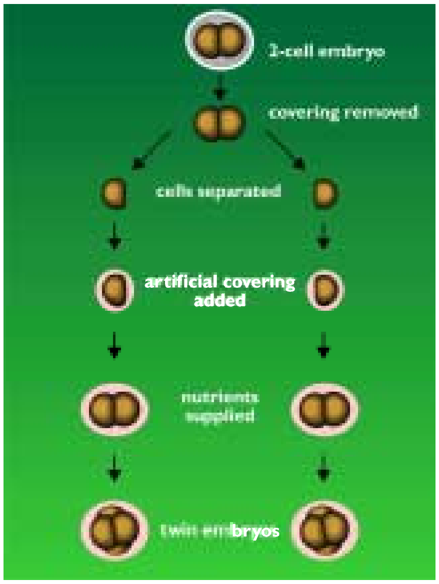
To some, however, the idea of human clones is not beyond the realm of possibility. Three decades ago, Kimball Atwood, professor of microbiology at the University of Illinois, went on record as stating that humans could be cloned "within a few years" (as quoted in Rorvik, 1969, p. 9). Nobel laureate James Watson later predicted: "...if the matter proceeds in its current nondirected fashion, a human being born of clonal reproduction most likely will appear on the earth within the next twenty to fifty years, and even sooner, if some nation should actively promote the venture" (1971).

Who can know what the future may hold in this regard? For example, in October 1993, at a meeting of the American Fertility Society in Montreal, two American scientists, Jerry Hall and Robert Stillman, touched off an unexpected controversy when they presented a paper on facets of their research in the area of *in vitro* fertilization techniques. At the time, Dr. Hall was the director of the *in vitro* laboratory at George Washington University; Dr. Stillman headed the university's entire *in vitro* fertilization program.

Starting with 17 microscopic human embryos ranging from the two-cell to the eight-cell stage, Hall and Stillman used new technology to multiply the embryos from 17 to a total of 48. Major newspapers and news magazines heralded the landmark event with feature articles. The *New York Times* published a front-page article under a headline that screamed, "Scientist Clones Human Embryos, and Creates an Ethical Challenge." *Newsweek* and *Time* both prepared cover stories on the Hall/Stillman experiments (see Adler, 1993; Elmer-Dewitt, 1993).

The controversy caused by the Hall/Stillman experiment was due, in large part, to the fact that human embryos were involved. However, it is important to note what the experiment did, and did not involve. First, the experiment did not involve the type of cloning of science fiction fame—in which genetic

material from a mature individual is nurtured and grown into a living replica of the original. Second, the experiment did not involve the cutting and splicing procedures by which DNA strands from cells are mixed and matched. In some instances, to mention just one example, molecular biologists have inserted human genes into the DNA of bacteria to produce insulin in large quantities. But the Hall/Stillman experiment did not involve this kind of genetic engineering.




Method by which Hall and Stillman produced twin embryos from a single embryo (after Kolberg, 1993).

Hall and Stillman were searching for a way to make *in vitro* fertilization more successful. A woman in which only a single embryo is implanted has somewhere between a 10 and 20% chance of becoming pregnant—if all goes well. But if that single embryo could be cloned into three or four, then the chances of a successful pregnancy would increase dramatically. These two researchers were not trying to produce cloned embryos that would be implanted into a potential mother. Rather, they were examining embryos resulting from fertilization of an egg by multiple sperm cells, and that therefore would not be able to live more than a few days at best.

Their experiment involved allowing the single-cell embryos to divide into two distinct cells, and then quickly separating them. In order to do this, the outer coating around the cells—known as the zona pellucida—that is essential to the embryo's proper development had to be removed. Once the cells had been separated, an artificial zona pellucida had to be created to take the place of the original one that had been destroyed. Hall and Stillman developed an artificial zona pellucida from a gel derived from seaweed. Once the artificial coating was replaced, the cells began to grow.

The experiment, so far as Hall and Stillman were concerned, had been a success and was repeated numerous times, producing 48 clones in all. But none of the clones lived more than six days. A detailed description of the process used by Hall and Stillman was published in *Science News* (see Fackelmann, 1994a). While many scientists praised the novel experiment, criticism from some in the academic and scientific communities was quite strong in certain instances (see Fackelmann, 1994b). Unfortunately, the conclusions suggested by headlines in major newspapers or articles in national news magazines were not always completely representative of the actual facts of the matter. Humans had not been cloned.

While we cannot condone the manner in which the Hall/Stillman research was carried out (i.e., accepting the inevitable death of living human embryos as the by-product of a scientific experiment), at the same time it is important that we understand exactly what the new technology allowed them to do, and that we not overstate the case in regard to what was accomplished. As Major has observed:

> The next stage may involve implanting viable embryos into women as part of an IVF [*in vitro* fertilization—BT] program.... What we must realize is that the IVF technique, with or without artificial twinning, involves the death of human beings. Whether an embryo has one cell or a thousand cells, it deserves the sanctity granted by God to all human life (1993, 13:93).

In the past, the cloning of humans was a subject best discussed within the genre of science fiction novels, not scientific journals. When scientists, or science writers, did discuss the possibility of human cloning, their comments usually went something like this:

> This is far beyond the reach of today's science. There is a vast difference between cloning an embryo that is made up of immature, undifferentiated cells and cloning adults cells that have already committed themselves to becoming skin or bone or blood. All cells contain within their DNA the information required to reproduce the entire organism, but in adult cells access to parts of that information has somehow been switched off. Scientists do not yet know how to switch it back on (Elmer-Dewitt, 1993, p. 66).

In this statement, Philip Elmer-Dewitt, a writer for *Time* magazine, echoed what seemed to be a commonly shared view among researchers involved in genetic engineering. No one had been able to clone mammals using **adult** somatic cells, because for some unknown reason a great portion of the DNA in those cells had been "switched off." But, as the old saying goes, "That was then; this is now."



Dolly, derived from the mammary gland of a Finn Dorset ewe, and her Scottish Blackface surrogate mother

In the February 27, 1997 issue of *Nature* (the official publication of the British Association for the Advancement of Science), there appeared what seemed at first glance to be an innocuous article titled "Viable Offspring Derived from Fetal and Adult Mammalian Cells" (Wilmut, et al., 1997). That article, however, announced the results of scientific research so significant that it not only would make history, but also would change forever the way scientists viewed cloning in both animals and humans.

Researchers from the Roslin Institute near Edinburgh, Scotland had accomplished what almost everyone in the scientific community thought to be impossible. Headed by embryologist Ian Wilmut, Scottish scientists produced a lamb using genetic material from the mammary cell of an **adult** ewe. The young lamb, named Dolly, did not owe her existence to a procreative act occurring between a ram and a ewe. Instead, Dolly was the result of a laboratory exercise in cloning.

When her arrival was announced, the entire world gasped—first in disbelief, then in amazement! As *Time* put it, the Scottish researchers had succeeded in

> ...scoring an advance in reproductive technology as unsettling as it was startling. Unlike offspring produced in the usual fashion, Dolly does not merely take after her biological mother. She is a carbon copy, a laboratory counterfeit so exact that she is in essence her mother's identical twin (Nash, 1997, p. 62).

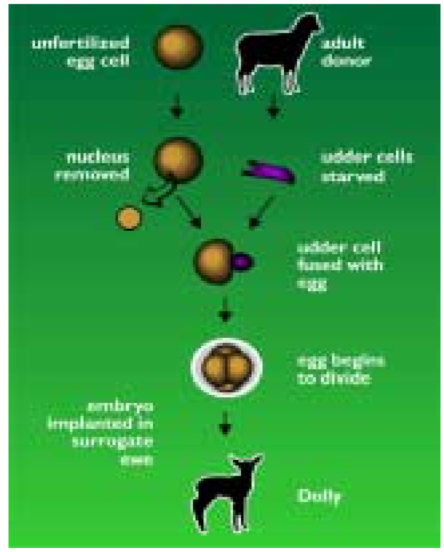
Briefly explained, here is what Dr. Wilmut and his coworkers did to make Dolly a reality. As noted earlier, embryonic cells are easier to use in cloning experiments than adult somatic cells because, for the most part, they are **undifferentiated**. In other words, they have not matured to the point where they have been able to carry out the instructions contained in the DNA within their nucleus that direct them to become skin cells, brain cells, eye cells, etc. In its young, embryonic state, an undifferentiated cell can become any other cell in the body because it has the capacity to activate any given gene on any given chromosome. Non-embryonic somatic cells, however, already have carried out their DNA instructions, and as a result they are **differentiated** (i.e., in their mature state, they have become nerve cells, muscle cells, blood cells, hair cells, etc.).

As a result, huge portions of the DNA instructions have been "deactivated" so that mature cells can carry out their particular function(s). Thus, much of the information that is coded within the DNA of adult cells no longer is accessible, due to the fact that it was "switched off" at maturity because it no longer is needed by the cell.

In the past, most scientists involved in the broad area of genetic engineering thought that the differentiation process was irreversible. However, Dr. Wilmut and his coworkers disproved that idea by devising a way to "reactivate" portions of the DNA molecule that previously had been deactivated, thus making adult somatic cells candidates for cloning.

First, the Scottish scientists searched for a mechanism that would allow them to arrest the normal cell cycle (i.e., the process through which cells go as they mature and prepare to reproduce themselves). They surmised that this might be accomplished by starving cells of the nutrients they needed in order to grow. Some of the cells chosen for the experiment were from the udder of a six-year-old Finn Dorset ewe. Once deprived of these critical nutrients, the mammary gland cells fell into a sort of "suspended animation" (what, in live animals, would resemble hibernation), a state in which they remained for one week.

Second, using the procedure mentioned earlier known as "nuclear transfer," Dr. Wilmut took an unfertilized oocyte (i.e., an egg cell) from a Scottish Blackface ewe and carefully removed its nucleus, leaving the remainder of the cell (cytoplasm, cell membrane, etc.) completely intact (see Stewart, 1997). Then he took the quiescent mammary gland cell, placed it next to the oocyte, and gently applied short bursts of electrical current, which prompted the egg cell to bond with the somatic cell and absorb its nucleus (containing a full complement of chromosomes). As a result, the egg cell possessed the number of chromosomes it would contain if it had been fertilized by the male's sperm. The biochemical activity usually associated with a zygote (the cell that results when sperm and egg combine) then began to occur.




Technique used by Wilmut, et al. to clone a sheep. Their breakthrough involved starving body cells of nutrients, thus interrupting the normal cycle of growth and division. In this quiescent stage, the cell can be "reprogrammed" to function as a newly fertilized egg (after Travis, 1997, 151:215).

Third, after one week of carefully monitored growth, the laboratory-engineered embryo was inserted into the uterus of a surrogate ewe to see if it would implant successfully and grow to term.

All of this may sound quite simple, but it is not. Dr. Wilmut's success came only after a long string of failures. In fact, he reported in his article in *Nature* that out of 277 eggs fused with udder cells, he and his team were able to produce only 29 embryos that survived more than six days. Of those 29, all died before birth except Dolly.

Since Dolly's arrival, researchers now have cloned both mice (see Travis, 1998c, 154:74; Wakayama et al., 1998, 394:369-274) and cattle (see Travis, 1998b, 154:21) from adult cells, silencing skeptics who felt that the events and procedures that resulted in Dolly were mere "flukes." Furthermore, the April 25, 1998 issue of *Science News* reported that Dolly had been bred to David, a Welsh Mountain ram, and was pregnant (see Travis, 1998a, 153:263). [Actually, by the time the story got to press, Dolly already had given birth. On April 13, 1998 she produced a 6.7-pound baby ewe by the name of Bonnie. Almost a year later, on March 24, 1999, Dolly gave birth to three healthy lambs—two males and one female.] This news dispelled the idea that as a clone she might be sterile and paved the way for future successes in the breeding of clones.

To the uninitiated, all of this may seem much ado about nothing. Why go to all the trouble and expense to clone an animal when normal procreative processes can produce it without all the bother? "Just let nature take its course," some might say.

There is much more to it than that, however. Cloning has the potential to make animal husbandry more efficient. Imagine (to use just one example) the plight of the dairy farmer searching for a way to breed cattle that produce better milk in greater quantities. If he could isolate the cattle that consistently produced more, and better, milk than all the others, he could have them cloned, thus guaranteeing whole herds of the highest quality milk-producing animals.

In addition, cloning has the potential both to reduce human suffering and to extend human life. Suppose (again, to choose just one hypothetical example) that scientists were able to discover a mechanism by which they could alter chimpanzees genetically so that portions of their immune systems, or products manufactured by those immune systems, were indistinguishable from those in humans whose own immune systems were diseased or damaged (and thus incapable of fighting off disease). These chimpanzees then could be cloned so that as many copies as needed could be produced, thereby ensuring life-saving animal products in an endless supply for use in humans.

Further, cloning has the potential to enlarge our knowledge about how cells differentiate and reproduce. Using information gleaned from the study of the cell during cloning, scientists believe they can learn more about why cancer cells grow out of control, or why birth defects occur. In short, cloning **does** hold forth immense potential in many different areas and, used properly, could offer tremendous benefits to mankind (see *Scientific American*, 1997).

The operative phrase here is "used properly." With cloning, as with many of the technologies offered by modern science, there can be serious scientific, biblical, and ethical implications. Rarely is the technology, in and of itself, morally objectionable; instead, it is the **use** of the technology that makes it so. Part of the problem is the fact that science itself is not equipped to deal with moral issues. There is nothing within the scientific method, for example, that can dictate whether nuclear energy should be used to destroy cancer cells, or entire cities. That is a judgment far beyond the scope of science to make.

Unfortunately, once the technology becomes available, there are those who are prepared to employ it, regardless of any ethical problems that might be associated with it. Since many within scientists either do not believe in God, or do so only accommodatively, they neither are interested in, nor restricted by, the guidelines and principles set forth in His Word. As a result, in their eyes the simple fact that the technology is available is reason enough to use it. Within the scientific community, this often is referred to as the "technological imperative"—whatever **can** be done **should** be done!

In regard to cloning, the most pressing questions on almost everyone's mind are ones such as: (a) why would anyone want to clone a human in the first place; (b) if attempts at cloning humans are successful, would a clone be an exact duplicate of the original; (c) will we eventually be able to clone humans; and (d) would humans produced by cloning possess a soul?

Why would anyone want to clone a human? First, parents might want to clone a child as a "replacement" for one that had died. Second, parents might want to clone a child to provide compatible organ transplants for a diseased relative. [There already have been cases of women becoming pregnant so they could abort the child to provide fetal brain cells for transplantation into a relative (e.g., a parent or grandparent suffering from Parkinson's Disease).] Third, individuals might want to have themselves cloned to guarantee immortality—if not in soul, at least in body. Fourth, some may desire to clone a human simply for the prestige and adulation that inevitably will result from having accomplished what no one else has been able to do. A Nobel Prize can provide a very strong incentive indeed!

If attempts at cloning humans are successful, would a clone be an exact duplicate of the original? A clone would be an exact **genetic** duplicate of the original—the word "genetic" providing a critical distinction. Merely possessing identical **genes** does not guarantee identical **people**. Ask anyone with identical twins. In fact, twins would be more alike than clones for the simple reason that the twins would have shared the same environment, upbringing, etc. Humans are more than merely a "bag of genes." Each of us is the end product of many different external forces that influence us from cradle to grave. Our personalities and attitudes are formed by parents, friends, teachers, daily routines, societal interactions, and many other factors that affect us during our lifetimes.

Will we be able to clone humans eventually? That remains to be seen. No scientist can answer that question, for to do so would be to possess the ability to predict the future—something neither a scientist, nor science, is equipped to do. Furthermore, there are too many unknowns. At this point in time, we do not know if human adult somatic cells will respond the same way adult somatic cells from sheep responded. We do not know if the process used to produce Dolly (nuclear transfer) will work in humans. And so on.

However, if the question were reworded so as to ask, "Will scientists **attempt** to clone humans?," the answer would be an unqualified "yes." An analogy might be helpful. When mountaineers are asked **why** they ascend a challenging (and often life-threatening) mountain, they routinely respond: "...because it's there." Some scientists likely will take the same approach. When asked **why** current technology should be used to clone humans, they will respond: "...because it's there." One writer has suggested:

> ...it is not a question as to **whether** we will attempt to clone a human being or not. Many technical hurdles will have to be overcome first before we can attempt to produce cloned humans, so they say. But if the moral and ethical scientists want to wait, or even shrink in fear from such an undertaking, there are many in the world who have the financial means, who do not have any scruples or reservations about cloning humans. What about them? (Sinapiades, 1997, p. 6, emp. in orig.).

I believe it no longer is a matter of **if** attempts will be made to clone humans using this new technology, but **when**. Eventually some scientist, or group of scientists, will yield to the temptation to apply the Scottish scientists' methodology to the human race.

If (and this is a big "if") scientists are successful in cloning humans, the most pressing question then becomes: Will the people so produced possess a soul? Much of the debate occurring today (especially in religious circles) centers on this question. For example, three staff writers for *U.S. News & World Report* posed the question, "Would a cloned person have its own soul?," and answered it as follows: "Most theologians agree with scientists that a human clone and its DNA donor would be separate and distinct persons. That means each would have his or her own body, mind, and soul" (Herbert, et al., 1997, p. 63).

In addressing what at the time was the unlikely possibility of the cloning of humans, Duane Gish and Clifford Wilson asked: "What do we say, then? Would a clone be truly human? The answer is that, indeed, he would be human, for its life came from human life even though in a manner different than is usually the case" (1981, p. 174). In addition, they noted, the cloned human "is already alive, responsible to God for his actions, needing to preserve his own body against sickness, to see that he is properly fed, and all the rest. Each clone would have its own individual responsibility, its own soul" (p. 172).

I concur with such an assessment. In James 2:26, James made this observation: "the body apart from the spirit is dead." The point, of course, was that when the spirit departs the body, death results. But there is an obvious, and important, corollary to that statement. If the body is alive, it must be the case that the spirit is present. This is a biblical principle that cannot, and must not, be ignored—especially in light of the present controversy. The simple fact of the matter is that **if** (again, a very big "if") scientists succeed in cloning living humans, those clones would possess a soul.

But only God can instill a soul. It is He Who "giveth to all life, and breath, and all things" (Acts 17:25). It is only "in Him" that "we live, and move, and have our being" (Acts 17:28). The real issue is not whether man is intelligent enough to clone a human, but whether or not—should that eventually happen—God will choose to instill the lifeless creature in the laboratory with a soul. This is a question no one but God can answer.

Often it is the case that with increased knowledge comes increased power. And with increased power comes the potential for misuse or abuse of that power. The question, "**will** we be able to clone humans?" is not the same question as "**should** we clone humans?" The first is a question to be answered by an appeal to science; the second is a question to be answered by an appeal to the Word of God.

Oddly, at times those who do not believe in God or His Word as an objective moral standard seem to understand the ethical/moral issues better than some Christians. For example, long before the technology was available that could lead to human cloning, evolutionist Gunther Stent of the University of Southern California stated: "The idea of cloning humans is morally and aesthetically completely unacceptable" (as quoted in Howard and Rifkin, 1977, pp. 125-126). Compare that with the comment of Christian ethicist Randy Harris of David Lipscomb University: "Although there has been a good deal of rhetoric on the evils that are just ahead, I have yet to hear a cogent ethical argument as to why even the cloning of a human would be wrong" (1997, p. 16). There are, in fact, several "cogent ethical arguments" that can, and should, be made against the cloning of humans, only two of which I would like to mention here.

Ask any knowledgeable ethicist, Christian or otherwise, and he or she will confirm that basic medical ethics requires that in any experiment, the subject must: (a) know the risks involved; and (b) give "informed consent." In the case of cloning, however, the tiny embryo being produced (and that more often than not will die) does not know the risks involved and cannot give informed consent. It is one thing to try—and fail—277 times using sheep cells in an attempt at cloning. Sheep are animals that do not possess souls and that are not made in the "image and likeness of God" (Genesis 1:26-27). But it is quite another thing to try—even once—and fail in an attempt to clone a human. **Embryos are living human beings!** [On occasion, pro-abortion forces often argue that embryos within the womb are "not living." If that is the case, then **leave them alone**. This, of course, hardly is an option because in nine months the end result is a human baby—something impossible to explain if the embryo was "not living" to begin with.] A laboratory littered with dead and dying sheep embryos is one thing; a laboratory littered with dead and dying human embryos is quite another! With cloning—if the success rate of the Scottish scientists is taken at face value—the failure rate will be staggering

Basic medical ethics also requires that the experiment be to the subject's benefit. Laboratory procedures for cloning humans scarcely would be to the benefit of the cloned embryos. Scottish scientist Wilmut and his colleagues saw 277 of the embryos they had produced perish before they saw a single one

live. What if the same failure rate holds true for the cloning of humans? Or, for the sake of argument, suppose that somehow the failure rate could be cut in half (in other words, out of 277 attempts, "only" 139 human embryos died in the process)? Would that then be ethically and morally acceptable? It would not! Producing human embryos—with the full knowledge that many more of them will die than will live—is indeed (to quote evolutionist Stent) "morally and aesthetically completely unacceptable." Medical ethicist Paul Ramsey has suggested that we cannot even develop the kinds of reproductive technologies being discussed here "without conducting unethical experiments upon the unborn who must be the mishaps (the dead and retarded ones) through whom we learn how" (as quoted in Restak, 1975, p. 65).

Furthermore, there may be other critical medical/health aspects to consider. For example, the May 27, 1999 issue of *Nature* magazine reported on a study of Dolly's chromosomes. Ian Wilmut (who was responsible for cloning Dolly) and his colleagues studied the length of chromosome ends (telomeres) from Dolly and two other sheep produced by the same nuclear-transfer process used to clone Dolly. It generally has been accepted scientifically that telomere deterioration is a reliable indication of reduction in life span; the more rapid and serious the telomere deterioration, the shorter the expected life span. Wilmut and his coworkers reported a marked deterioration in the telomeres of Dolly's chromosomes compared to those from non-cloned animals, and even suggested that "the most likely explanation" for the deterioration observed in these animals "reflects that of the transferred nucleus. Full restoration of telomere length did not occur **because these animals were produced without germline involvement**" (see Shiels, et al., 1999, 399:317).

In other words, since Dolly was cloned from the mammary gland cell of a six-year-old sheep, in essence her telomeres already were six years old and therefore deteriorated more rapidly than those of non-cloned animals produced by regular procreative procedures. The scientists involved in this research stressed that "it remains to be seen whether a critical length will be reached during the animal's lifetime." That is to say, it is impossible to state with certainty whether the telomere deterioration will cause Dolly to die prematurely. However, these same scientists admitted that "[t]elomere-based models...predict that the nuclear-transfer-derived animal 6LL3 [Dolly's numerical designation in the scientists' study—BT] **might well reach a critical telomere length sooner than age-matched controls**" (Shiels, et al., 1999, 399:317, emp. added). In simple terms, it may turn out that cloned creatures have markedly reduced life spans compared to those produced via normal, sexual reproduction. If these data are confirmed, this finding obviously will have serious implications for attempts at human cloning. If a 65-year-old man had himself cloned (to choose just one example), the clone just might begin life with a 65-year head start toward the grave!

Further, in examining the ethical issues surrounding procedures such as these, the implications of the various technologies must be acknowledged. For example, if cloning were possible:

1. It could be used to provide children for unmarried people.
2. Parents could pre-select the sex (and many other attributes) of their child(ren).
3. Women's liberation would be complete, since no male would be needed. The old Cockney saying "It takes a man to make a girl," no longer would be true.
4. Large batches of human clones could be made for statistical studies.
5. Clones could be produced in order to harvest "spare parts" for transplants (e.g., bone marrow, organs, etc.).
6. People enamored of their own importance could ensure that exact genetic replicas of themselves were brought into existence via cloning—by tens or hundreds if they so desired.

These are serious matters indeed. If we scrutinize carefully the alleged benefits some are suggesting might be derived from human cloning, surely there is much less here than at first meets the eye. Gunther Stent was right when he suggested that the idea of cloning human beings is "morally and aesthetically completely unacceptable." Producing people in "herds" in order to harvest spare parts, for use in laboratory statistical studies like so many guinea pigs, or merely to satisfy personal egos in a vain attempt to

guarantee physical immortality is abhorrent. Twenty years ago, David Lygre wrote: "The current risks of abnormality and our reverence for human life should rule these experiments out" (1979, p. 44). Indeed they should. Nothing has changed in this regard in the twenty years since that assessment was made.

Those interested in further information on the biblical ramifications of cloning may wish to examine the following materials: (1) *Cloning: Miracle or Menace?*, by Lane P. Lester and James C. Hefley (1980); (2) *Manipulating Life: Where Does It Stop?*, by Duane T. Gish and Clifford Wilson (1981); (3) *Genetic Engineering*, by J. Kerby Anderson (1982); and (4) *Human Cloning*, by Lane P. Lester and James C. Hefley (1998).

**Artificial Insemination**

If a married couple desires to have children, their inability to conceive and give birth to those children can be seen only in its narrow context as that couple's personal disaster. While the rest of planet Earth is in the midst of a population boom, such a scenario hardly can be looked at by these potential parents as any kind of "blessing." Rather, such a situation generally is viewed as both an obstacle and a burden. Therefore, everything that can be done, will be done to help such couples have the children they so desperately desire.

Many women have taken fertility drugs with success. Other couples, still unable to bear children, have adopted otherwise homeless children—to the benefit of everyone involved. Still others have opened their homes to foster children who have taken the place of their own children. However, due to the effectiveness of contraceptive measures, a tremendous increase in the number of abortions, and the increasing desire on the part of many unwed mothers to keep their children, fewer children are available for adoption.

When infertility drugs are ineffective, when there are no adoptive children to be had, and when foster children either do not satisfy the emotional needs or are unavailable, what options are open to a married couple desiring children? It seems there are only two: (a) remain childless; or (b) resort to "artificial" means. It is to these artificial means that I now would like to direct your attention.

Most couples who contemplate artificial insemination (commonly known by the acronym AI) do so because the husband either is infertile or subfertile, although there are other reasons for choosing AI. Whenever there is a fertility problem, the cause may be traced to the male in about 10-15% of the cases, due to: (a) inadequate sperm numbers; (b) faulty sperm; (c) poor ejaculation; or (d) inability to perform the sex act itself (impotency).

Artificial insemination is not tomorrow's dream; rather, it is used quite frequently today. It is, as a popular science magazine put it, "one answer to childlessness" (Stossel, 1980). Many people, however, do not realize that there are various types of AI. These need to be discussed, because some are unacceptable to the faithful child of God.

**AIH** designation given to artificial insemination performed using only the husband's sperm
**AID** designation given to artificial insemination performed using only donor sperm
**AIDH** designation given to artificial insemination performed using sperm from both husband and donor

Here is an instance where it is unwise to reach hasty conclusions. The use of artificial insemination procedures does not **always** have to be opposed, since in certain instances AI can occur using the husband's sperm and the wife's egg. If, for example, the sperm count is low, sperm cells can be collected over a period of several weeks and frozen until needed. They then can be thawed, centrifuged, and inserted into the wife's womb. If the procedure is successful, the result is a child formed from the sperm and egg of its biological parents. Christians may support such artificial procedures when performed to assist normal procreation, since such procedures are little more than a "technological crutch" for couples suffering a breakdown in their own reproductive biology. This is simply medical science aiding in the correction of a physiological problem. There are no biblical injunctions against such, or any biblical principle that would be violated by such.

However, AI also can be used in such a way as to destroy the God-ordained biological basis for the human family and parenthood. It now is possible to mix sperm and egg from **any** two people, and it even is possible to put the fertilized embryo into **any** normal womb and thus have **any** final set of parents (or, for that matter, any single person) gain custody of what will be the newborn infant. In the end, parenthood may have nothing whatsoever to do with biological relationship. Further, as Nancy Pearcey has suggested:

> By using both abortion and artificial reproduction, we are building a technology of reproduction around the parents' wishes. To put it bluntly, if you don't want the child growing within you, you can destroy it through abortion—and if you do want a child you can get one to order through a trip to the laboratory. There is an erosion of respect for existing life as a gift of God wherever we find it. We can now hire life and death at the parents' wishes (1985, p. 6).

Thus, in some instances, there can be serious implications regarding the use of artificial insemination. Consider, for example, the following:

1. Women could bear children for unmarried men.
2. Women could bear children for other couples (surrogate motherhood).
3. Women could bear children for homosexual men.
4. Women who are lesbians could have children without a male partner. ["An estimated 10,000 children are being raised by lesbians who conceived them through artificial insemination" (Turque, 1992, p. 39).]
5. The sex of the child could be preselected since methods now are available to concentrate the Y chromosomes (necessary for the production of male children) in the sperm.
6. Possibilities exist for those donating sperm to pass on unwanted traits.
7. Emotional aspects are involved. The wife, for ex-ample, might feel an "attachment" to the donor if donor sperm are used.
8. Legal and/or moral problems often result. Who is the legitimate father if donor sperm are used? Is the child legitimate?

J. Kerby Anderson has lamented that "somewhere in the process, a child has ceased to be a gift of God (cf. Psalm 127:3) and has become a commercial item" (1982, p. 41). Parents choosing donors from photographs of attractive young men or women become consumers, "alternately selecting and rejecting various possible variations in children" (Restak, 1975, p. 78).

The use of donor sperm, donor eggs, or "surrogate mothers" stands in stark contradiction to God's plan for the home. While it is true that there are numerous physical aspects of marriage and the home, **the ultimate thrust of the home is spiritual**. It was designed as an earthly arrangement to enhance our heavenward journey. (Perhaps it is the home's spiritual nature that has invoked the vicious attacks of atheism in recent years.) The benefits of the family unit are many: (1) The home provides for intimate companionship; generally, it is not good to be alone (Genesis 2:18), and man and woman complement one another (1 Corinthians 11:11-12). (2) Within the confines of the monogamous home, Jehovah has provided a moral means of satisfying sexual appetites (Proverbs 5:15ff.; 1 Corinthians 7:2). (3) The family is designed to stabilize social relationships and promote community and international solidarity. No society can survive if the home is destroyed. (4) The family unit is the avenue by which children may be brought into the world legitimately. Moses recorded: "And the man knew Eve **his wife**; and she conceived" (Genesis 4:1, emp. added). According to divine design, marriage precedes the bearing of children (1 Timothy 5:14), whereas today, frequently this order is reversed, or the marriage part is ignored altogether. (5) The family unit was planned to provide an atmosphere of love and trust (cf. Proverbs 15:17; Proverbs 17:1) that would create an ideal environment for spiritual growth. This is why the home absolutely must be a moral

and religious training center (cf. Deuteronomy 6:4-9; Ephesians 6:1-4). To ignore this truth is to miss the real meaning of the divinely planned family. All philosophical, social, or scientific attempts to circumvent the home—God's family arrangement—are wrong and must be resisted.

Inordinate practices such as the use of donor sperm, donor eggs, or surrogate mothers ignore the true function of human reproduction. The world often forgets that childbearing never was intended to be an end within itself; it is but a part of a larger plan. Parental responsibility commences at conception and does not end until the child is reared to a level of independent maturity. A greater part of that rearing is training of the child for God's service. How could any Christian surrender his or her reproductive powers to another person, thus ignoring the divine responsibilities connected therewith? Or, how could one ask another to do the same premeditatedly? Yet, if such acts are moral, what would prevent a single woman from having herself impregnated artificially, thereby avoiding the "inconvenience" (as some would view it) of marriage? Jack Evans has remarked:

> ...God has given His spiritual law to govern the physical law of sex and reproduction. His spiritual law says the oneness of the flesh can be approved only by Him in the marriage of the male and female who are producing another part of their flesh (Hebrews 13:4; I Corinthians 6:16; 7:1-5). Thus, the Bible teaches that the male and female producing the offspring of the one flesh, according to spiritual law, must be married to each other. Paul substantiates this when he says, "I will therefore that the younger women marry, bear children..." (I Timothy 5:14, KJV). It is obvious that marriage precedes bearing children. Thus, if the female bearing the child is not married to—is not one flesh with—the male in the reproduction process, they violate God's spiritual law. God never designed woman to be merely a baby bearing machine. He designed her to be wife, baby bearer and mother all in one. God never designed man to be a mere stud. Man was planned to be husband, progenitor and father all in one (1987, 129:358).

Any action that strikes at the heart of Jehovah's divine plan and purpose for the home must be avoided and opposed.

### *In Vitro* Fertilization

On November 5, 1990, *Time* magazine published an article titled "A Revolution in Making Babies." The author, Philip Elmer-Dewitt, observed that in the past

> ...there was only one way to make a baby, at least for humans. Either it worked or it didn't, and if it didn't, there was little anyone could do about it. All that has changed dramatically. The growing problem of infertility—exacerbated by a generation of would-be parents who put off having babies until their 30s and 40s—and the early successes of *in vitro* ("test tube") fertilization have laid the groundwork for a revolution in reproductive technology. Hardly a week goes by without news of a breakthrough to help nature take its course (1990, p. 76).

In his article, Mr. Elmer-Dewitt addressed some of these breakthroughs which, he said, "...seem to multiply faster than test-tube babies. Most are variations on the pioneering procedure known as *in vitro* fertilization" (1990, p. 76). What is *in vitro* fertilization [IVF]? How does it work? And what should be a Christian's response to it?

The method known as artificial insemination (discussed in the previous section) is not used as often as some other methods of artificial reproduction, due in part to the fact that AI generally is useful only when dealing with male reproductive problems. Women, however, often have more fertility problems than men, due to the fact that their reproductive system is so much more complex than the male's. When the woman is having reproductive problems, AI is not likely to help the situation (although there may be exceptions).

The process of fertilization and subsequent implantation of the human egg is so complicated that it is amazing that there are not more problems than there are. With *in vitro* (from the Latin meaning "in glass") fertilization, the problems that do arise are becoming increasingly manageable. Normally ovaries are stingy with their eggs, releasing only one egg approximately every twenty-eight days. But an injection of the proper hormones can cause "superovulation" (also known as "hyperovulation")—the release of multiple eggs. To collect the eggs for use in IVF procedures, approximately thirty-two hours after the hormone injection an incision is made in the female's abdomen and the ovaries are examined with a laparoscope (a telescope-like device with internal lighting capabilities). When a "blister" is noticed to

have occurred on the ovary, a suction needle is inserted to remove the eggs stored in the blister. The eggs are placed in a special growth medium for several hours, and then into a suspension of sperm. Within a few hours, fertilization will have occurred.

All of this may sound simple, but it is not. Sperm, for example, must undergo a process called "capacitation" before they can fertilize an egg. Normally this process occurs in the uterus, but in IVF, it must be accomplished artificially. Once fertilized, the egg develops for several days outside the body. Implantation of the embryo is critical, since timing is so important. The embryo must be at a certain stage (usually 2-2½ days old), and the uterus must be ready. At the appropriate time, the fertilized egg is inserted into the uterus through a long, soft, plastic tube.

*In vitro* fertilizations have been accomplished in rats, dogs, cats, mice, and even man. As far back as the 1940s, scientists have experimented with the fertilization of human eggs outside the womb. In those days, the embryos lived only a short time. In 1959, Daniele Petrucci, a research biologist with the University of Bologna in Italy, announced he had fertilized a human egg that grew outside the body for fifty-nine days. He claimed that "a heartbeat was discernible," but he destroyed it because "it became deformed and enlarged—a monstrosity" (see Grossman, 1971, p. 43; Lygre, 1979, p. 24). In 1966, Russian scientists announced to an unsuspecting world that they had succeeded in keeping more than 250 human embryos alive in a laboratory setting for periods of up to six months (Lygre, 1979, p. 24). In July 1974, Douglas Bevis of the University of Leeds in England announced that he had succeeded in producing three infants through IVF. However, he never produced the children or families to prove his claim, and therefore the scientific community remained skeptical (see Howard and Rifkin, 1977, p. 109). Then, on July 25, 1978, John and Lesley Brown of Great Britain gave birth to their daughter, Louise—the result of *in vitro* fertilization performed by Patrick Steptoe, a gynecologist in Oldham, England, and Robert Edwards, a physiologist from Cambridge University (Gwynne, 1978).

Suddenly IVF in humans no longer was the stuff of science fiction. To date, well over 20,000 babies have been produced through this procedure, representing a lot of "progress" in a relatively short time (Elmer-Dewitt, 1990, p. 76). The Bourn Hall Clinic in Cambridgeshire, England, founded by Drs. Steptoe and Edwards, produced 1,295 children in its first ten years—"almost a tenth of the world's test-tube babies" (*People*, 1989, p. 77). Of those, 615 were in attendance for the clinic's tenth anniversary celebration, including the historic Louise Brown.

Clinics specializing in IVF procedures are springing up all around the world. According to data released in 1988 by the American Fertility Society, at that time the United States had over 175 such clinics (Scott, 1988, p. 17). One of the best-known of those clinics is operated by Drs. Howard and Georgeanna Jones in Norfolk, Virginia. Billed as the "nation's premier test-tube baby program," the Jones' clinic specializes in *in vitro* fertilization (Gold, 1985). Of interest, however, are statistics indicating that nearly half of the estimated 175 IVF centers in America never have produced a single baby (Scott, 1988, p. 17). Because there have been few regulatory laws on the books dealing with these rapidly increasing reproductive technologies (thus little government involvement), accurate data on the actual successes (or failures) of clinics specializing in IVF are hard to come by. However, data released in 1988 indicated that the chance of becoming pregnant after a successful *in vitro* procedure was 17%, but because of the high risk of miscarriage or stillbirth, the chance of actually having a baby dropped to only 11% (Scott, 1988, p. 17). Five years later, the success rate remained about the same. In the United States it was 14%, and in Great Britain 12½% (Winston and Handyside, 1993, 260:932). As Elmer-Dewitt noted, "But even at well-run clinics, the original IVF fails 75% to 85% of the time" (1990, p. 76).

The costs of these procedures are considerable. The price for a single attempt, regardless of its success or failure, varies from $7,000 to $15,000, depending on the clinic, complications involved in the procedure, and other factors. In his book, *Biotechnology and the Assault on Personhood*, Donald DeMarco documented the cost factors associated with IVF attempts, including some potential parents who spent over $40,000. He also noted that there are additional "costs" not always considered, and that they are not always financial in nature (1991, pp. 119-132). As a result, efforts are under way to improve the success rates of *in vitro* fertilizations using a variety of methods such as cryopreservation (freezing of the embryos prior to use) and a number of others (see Elmer-Dewitt, 1990, p. 76; Winston and Handyside, 1993).

When topics such as those being discussed here (i.e., reproduction and the right to bear a child) are under consideration, emotions not only are involved but often run high. Therein lies part of the problem. Two specific examples may be cited. Pat Anthony was a 48-year-old grandmother from Transvaal, South Africa. Her married daughter, Karen, 25, was unable to have any more children due to the fact that she almost bled to death during her first delivery and had to have her uterus removed. Through IVF procedures, eggs from Karen's still-functioning ovaries were fertilized by her husband Alcino's sperm. But the historic part of the story is that the fertilized eggs were implanted in Karen's **mother**, Pat. In other words, Pat would be the first woman ever to give birth to her own grandchild! On October 14, 1987 Pat did just that, except it wasn't a grand**child** but grand**children**—three to be exact. David (5 lbs., 8 ozs.), Jose (4 lbs., 15 ozs.), and Paula (3 lbs., 9 ozs.) were born by caesarean section and made not only the evening news, but history (Levin, 1987, p. 40). Now Karen and Alcino Ferreira-Jorge had the children they so desperately desired. The cover of the October 19, 1987 issue of *Peo*ple magazine heralded the event with the bright yellow wording, "A Mother's Love," referring to the love that Pat had for her daughter—a love so deep that she was willing to bear the children her daughter Karen could not (Levin, 1987).

Almost four years later, *People* would scoop another exclusive—the first grandmother in America to do what Pat Anthony had done in South Africa. Arlett Schweitzer, 42, of Aberdeen, South Dakota, agreed to have herself impregnated via IVF procedures with eggs from her daughter Christa that had been fertilized by Christa's husband, Kevin. Two of the four eggs were implanted successfully in Arlett's uterus, producing twins for Christa and Kevin Uchytil.

Real tearjerkers, these dramas. They make great copy, not to mention blaring headlines. And the first thing that most people think when they read such emotion-packed stories is, "How wonderful that these people finally have the children they wanted for so long!" As Christa Uchytil said, "My animals, my home, my husband, that's my life. Now I'll have babies too. It will be perfect" (as quoted in Plummer and Nelson, 1991, p. 40).

But is it "perfect"? Previously, I discussed the fact that, generally speaking, technologies are neither good nor bad in and of themselves. Rather, it is the **use** of them that determines their moral implications. There are some scientists and ethicists, however, who argue that certain reproductive technologies are **intrinsically** evil—for the simple reason that they cannot be carried out without violating certain ethical principles.

As I mentioned earlier, basic medical ethics requires that in any experiment the subject must know the risks involved and give "informed consent." In the case of IVF, however, the tiny embryos created (and often subsequently destroyed) in a laboratory do not know the risks involved and cannot give informed consent. Many people are unaware that while **multiple** eggs are extracted and fertilized, **only a few** are selected for implantation. Doctors actually pursue what might be called accurately a "survival-of-the-fittest" procedure wherein they examine the fertilized eggs, purposely and carefully select those that appear the healthiest, and then implant several of them into the woman's uterus. Once that has been accomplished and the gestation process is under way in the womb, a new technology known as transabdominal selective reduction allows doctors to further examine the zygotes and surgically destroy those that are deemed "inferior" (see Calhoun, 1990). Thus, two of Darwinian evolution's most important concepts—selection and survival of the fittest—are brought to bear in this unique reproductive procedure. But what happens to the other fertilized eggs that are "unfit" to survive, and thus unused in this particular process? They quite literally are washed down the drain of the nearest sink!

Basic medical ethics also requires that the experiment be to the subject's benefit. It hardly is to the embryos' benefit to be washed down the drain and drowned in the early hours of life! Nor is it to the embryos' benefit to be implanted into a womb, only to see their potential life snuffed out through "transabdominal selective reduction" or a miscarriage (estimates are that 60% or more of artificially implanted embryos miscarry; Winston and Handyside, 1993, 260:932).

Are these tiny embryos human? If one of them were traveling down a woman's Fallopian tube or implanted in her uterus instead of floating in a Petri dish, it would be considered unquestionably human. Yet somehow because it now is capable of being manipulated outside the womb its "humanness" ceases? How so? Ethicist Allen Verhey has commented:

> Even if one did not hold that the human being's history begins with conception, respect for human life is nevertheless violated here...because here human life is created in order to be destroyed. Here the procedure demands from the very beginning the intention to kill those intentionally fertilized but not chosen (1978, p. 16).

Further, the question needs to be asked: What are the potential applications and implications of IVF? While some may be acceptable, others most certainly are not. Consider the following.

1. Previously infertile women might become fertile via IVF.
2. Women who desired children, but whose health would not permit routine pregnancy, could donate their eggs but have them placed, after fertilization, into a surrogate mother who was healthy.
3. Older women who wanted to avoid such risks as Down's syndrome could accept a fertilized egg from another woman donor, then carry it to term on their own.
4. Women who are recognized as potential carriers of certain genetic disorders could have fertilized donor eggs implanted in their wombs, thus avoiding the possibility of the genetic disease being expressed in the child.
5. Women could "rent" their wombs, as they become surrogate mothers.

Is the Christian opposed to married couples having children? Certainly not. Is the Christian opposed to using legitimate means to help childless couples have the children they so desperately want? Certainly not. Christians, however, **are** opposed to the wholesale production and subsequent slaughter of innocent human embryos in the search for the "fittest" that is deemed good enough to be given a chance at survival.

The question sometimes is asked as to whether one day it will be possible to develop IVF procedures that allow removal of only one or two eggs from a woman's ovary, with the subsequent fertilization and implantation of all those eggs so they (potentially) can grow to term. This, it is argued, would avoid destruction of the remaining embryos, and thus would be a method not necessarily deemed unethical, immoral, or unscriptural. Research in this area is continuing. The outlook, however, is bleak because "the quality of both the embryo and the uterine environment affects success. Individual human embryos only have a poor chance of development to fetal stages" (Winston and Handyside, 1993, 260:932). At costs ranging from $7,000 to $15,000 for a single attempt, every effort will be made to ensure success. The obvious way to increase the chance for success is to fertilize and implant many eggs, not just one or two. But therein lies part of the problem. While multiple eggs may be implanted, numerous eggs still remain unused (and subsequently are destroyed).

In recent years, additional IVF procedures have been developed. In one procedure known as Gamete Intra-Fallopian Tube Transfer (GIFT), the eggs and sperm together are placed into the woman's fallopian tube(s) in the hope that conception will occur. The GIFT procedure requires that a woman have at least one normal fallopian tube, and, unlike a true IVF procedure, permits fertilization to occur inside the fallopian tubes, instead of in an incubator outside the body. Except for women with two damaged fallopian tubes, women who are candidates for IVF also are candidates for GIFT, which generally has a somewhat higher success rate (25-35% in some cases).

However, the GIFT procedure does have certain disadvantages when compared with routine IVF procedures. For example, at present most GIFT procedures require laparoscopy in order to transfer the eggs and sperm into the fallopian tubes, which makes them more complicated than an IVF embryo transfer through the vagina and cervix into the uterus. Newer developments allow for placement of the gametes into the fallopian tube(s) using a tiny catheter threaded through the cervix and uterus, but this technique is more difficult to perform successfully than the procedure that allows direct visualization via a laparoscope. And, if GIFT fails, there is no way of knowing whether the eggs were fertilized—something that is readily apparent in regular IVF transfers.

Another procedure, known as Zygote Intra-Fallopian Transfer (ZIFT), actually is a combination of IVF and GIFT. The sperm and egg are mixed in a culture dish outside the womb, but one day later the developing zygote is placed into the fallopian tube prior to becoming a full-fledged embryo. This procedure is considered especially useful in cases where the husband is subfertile, since sperm may be collected over a period of time, frozen until needed, then thawed and used in a ZIFT procedure. It does suffer, however, from the same drawbacks as GIFT procedures.

Contrary to the unproven and unscientific assertions of evolutionists, man did not evolve from lifeless, primordial matter. Rather, as the Bible clearly teaches, "Jehovah God formed man of the dust of the ground, and breathed into his nostrils the breath of life; and man became a living soul" (Genesis 2:7). It is God who "giveth life, and breath, and all things" (Acts 17:25). Human life, as a gift from God, is sacred. Yet there is a growing tendency to ignore this divine principle and to view human life as that which may be destroyed capriciously. Should Christians make this an issue of ethical concern? Or shall we, to use Leon Kass' words, "leave it so that discarding laboratory-grown embryos is a matter solely between a doctor and his plumber" (as quoted in Restak, 1975, p. 65)?

Man is the offspring of God (Acts 17:28-29). Intellectually and morally, humankind was created in the image of the Godhead (Genesis 1:26-27; cf. Ephesians 4:24 and Colossians 3:10). Mankind, as designed by God, was thus "fearfully and wonderfully made" (Psalm 139:14; cf. Psalm 94:9). As he originally came forth from the Creator as one of the "wondrous works of him who is perfect in knowledge" (Job 37:16), he was, together with the rest of creation, "very good" (Genesis 1:31). Some today speak with great fervor about the "technological imperative" I mentioned earlier—whatever **can** be done **should** be done! Against this kind of unscriptural thinking the faithful Christian must press the ethics of the Bible. Regardless of what we are being told by some (like humanists), the end does not always justify the means. Ethics is not situational, but rather is bound by the absolute standard presented in the Word of God.

No one should be made to feel ashamed because of an inability to produce children. There are times when problems occur that are no one's "fault." Blame cannot (and should not) be assumed or assigned, for that only adds additional feelings of unnecessary guilt. Some physical problems cannot be overcome by ethically acceptable methods. Christians should realize that IVF procedures are expensive, have low success rates, and generally produce a situation where fertilized human embryos are created in greater numbers than can be used. Thus, those that are not "fit to survive" are destroyed—a clear violation of the principles in Scripture regarding life as a gift from God.

Furthermore, while biblical teaching on the ethics of such matters is being studied, its instruction on stewardship should be examined as well. Even if a means is available to circumvent the physical inability of a couple to produce children, it may be unwise to employ it. Incurring huge amounts of debt, depleting family funds needed to pay routine bills, and other such practices may not fall within the purview of biblical stewardship. All of these factors, and more, should be considered by those contemplating use of these new technologies.

## PRENATAL MANIPULATION

### Fetal Tests and Treatments

Prenatal (i.e., before birth) manipulation is becoming increasingly common. No doubt this is due, at least in part, to the easy availability of a diagnostic procedure known as amniocentesis, in which a needle attached to a syringe is inserted through the abdominal wall of the pregnant woman in order to collect approximately 200 cc of amniotic fluid (the liquid surrounding the baby). The process, which takes about an hour, is relatively painless and provides fluid that can be inspected for fetal cells.

However, usually there are too few cells in the amniotic fluid to examine directly, so the cells are collected and grown for about three weeks. Determinations then may be made using the resulting fetal cells. With amniocentesis, physicians can diagnose more than seventy disorders such as Tay-Sachs disease, Down's syndrome, Turner's syndrome, Klinefelter's syndrome, and galactosemia, among others. In addition, the sex of the fetus can be determined via amniocentesis as well (Fletcher, 1980).

Other procedures, such as sonograms, also may be employed, within limits, to determine the health of the unborn infant. This is another example where the technology is neither "good" nor "bad" within itself; rather, it is the ultimate **use** of the technology that determines its nature.

Motives play an important part here. If parents request, or submit to, any or all of these procedures because they wish to equip themselves with additional information in order to prepare for the birth of their child—regardless of the pre-or postnatal condition of that child—that is one thing. But should the parents desire to use the tests to decide the ultimate fate of their as yet unborn child, that is something else altogether.

If, for example, based upon the results of any of these tests, the fetus is determined to be "defective," what options are open to the prospective parents? First, and perhaps most obvious, the parents simply may do nothing and allow the child to be born, thereby taking its rightful place in their family Second, depending on the prevailing circumstances, *in utero* prenatal surgery and/or blood transfusions may be performed to correct, or eliminate, the medical problem. However, even with the technology available today, this is an extremely rare option and one that is not in widespread use. Third, parents may choose to terminate the pregnancy via abortion. Norman Gant, chairman of obstetrics and gynecology at the Health Science Center of the University of Texas, remarked: "We are able to give our parents information on which to base real choices about continuing or terminating a pregnancy, and it is very reassuring to them during the remainder of their pregnancies" (1980, p. 33). Dr. Gant's point was that with certain of these techniques, it is possible to "have a look at" the unborn baby and then choose whether to allow it to live or to kill it via abortion.

Of these three options, there is little doubt which one has become the most popular. Genetic surgery is rare, because currently so few genetic diseases are capable of being treated or prevented in this fashion. Fetal blood transfusions offer limited success because they are not beneficial in all cases and are difficult to perform. The "burden" of a "defective" child does not fit into the lifestyle of many in this generation. Abortion is the obvious means of avoiding such an occurrence. Thus, it is to abortion-on-demand that many turn in an effort to rid themselves of the so-called "defective" child growing in the womb.

**Abortion**

According to Paul Marx, the United Nations estimates that there are some 55 million abortions performed annually throughout the world (*Abortion International*, n.d., p. 1). On January 22, 1973 the nine justices that form the Supreme Court of the United States voted (in a seven-to-two decision) to allow abortion as a legal method of destroying unwanted babies. Subsequent to that edict, the Centers for Disease Control in Atlanta, Georgia have reported the number of infants slain by abortion to be approximately 2 million each year—more than all the American lives lost in the almost 200 years of wars since our country's inception. In fact, in the unpopular 11-year Vietnam war, over 58,000 Americans lost their lives, yet this country's medical profession, via abortion, kills more than that in any given 11 days!

If a person shoots an eagle—the symbol of our country—the judicial system will throw him in prison and toss away the key. That same system will stop a multi-million dollar dam in the state of Tennessee to save an inch-long snail-darter fish, or fly a former president of the United States to the northwest sector of America to discuss the fate of a spotted owl. Yet should someone wish to destroy the human baby growing inside the mother's womb, such an act will be looked upon not only as entirely within that person's rights as an American citizen but as perfectly legal.

It sometimes is suggested that abortion does not constitute taking human life. To those who offer such a suggestion I ask: What is growing in the mother's womb? It is the result of the union of the human male sperm and human female egg—which guarantees its "humanness." And there can be no doubt that it is alive; if it is not, then leave it alone! "Oh, but we cannot do that," abortionists argue. Why not? Because in nine months the result will be a **living, human child**! Abortion—all the disclaimers of its proponents notwithstanding—is the cold-blooded murder of a God-given life. And no rhetoric on the part of pro-abortion forces ever can change that fact.

While the U.S. Supreme Court outlawed the death penalty for hardened criminals, it simultaneously imposed that same penalty upon multiplied millions who never had committed a single crime. Their only "crime" was that they were not "perfect," or that they threatened to arrive at an "inconvenient" time. These tiny infants, still in the womb, are being murdered by techniques more cruel, more vicious, and more inhumane than any thus far devised by even Hollywood's worst gut-wrenching horror movies. These deaths occur in abortion clinics, doctors' offices, and hospitals around the world. The conspirators in this atrocity include potential mothers, consenting doctors, whining advocates of "planned parenthood," and approving judges.

We lead western civilization in many areas, yet we have come to the point where life is so cheap that hospitals have been turned into slaughter houses, doctors have been turned into butchers, and our own children have been turned into "blobs of tissue" to be excised and unceremoniously dumped in the local landfill. We abhor from a distance the unspeakable crimes of Adolph Hitler as he murdered six million Jewish men, women, and children. Yet in our own land we snuff out the lives of countless millions far more defenseless than they. The announcement of an unwanted pregnancy, or one that likely will produce a less-than-perfect child, often is met with sheer hysteria. Years of having been taught evolution as a fact have taken their toll. Convinced that man is nothing but a "naked ape," the value of human life has diminished. After all, they shoot horses, don't they? And now the violence spawned by such thinking has reached even into the womb itself in what must be one of the most despicable of all acts—murder of the helpless!

Abortion is a violation of biblical morality, and should be opposed by every faithful child of God. The Proverbs writer stated: "There are six things which Jehovah hateth; Yea, seven which are an abomination unto Him; haughty eyes, a lying tongue, And **hands that shed innocent blood** (6:16-17, emp. added). What blood could be more innocent than that of a tiny infant not yet fresh from the womb?

## POSTNATAL MANIPULATION

Occasionally amniocentesis is incorrect in its diagnosis, resulting in the birth of a "malformed" child. Or, perhaps amniocentesis was not performed, and thus the child born to unsuspecting parents is "deformed" in some way. In such cases, it is too late for any type of prenatal manipulation, even abortion. In order to cope with this problem, some hospitals have begun to employ what is known among health care professionals as "passive treatment." This term is a euphemism intended to disguise the fact that the baby is placed on a cold, stainless-steel table in an empty, dark, hospital room beneath a large air-conditioning vent and allowed to starve to death or die of exposure (see Lygre, 1979, p. 66). Joan Hodgman of the University of California School of Medicine admitted: "If we have a baby that I know is malformed beyond hope, I make no attempt to preserve life" (as quoted in Lygre, 1979, p. 66). Richard McCormick of the Kennedy Center for the Study of Reproduction and Bioethics at Georgetown University has suggested: "Life is a value to be preserved only insofar as it contains some potentiality for human relationships" (1974).

An investigation carried out almost thirty years ago—1970 to 1972—at the Yale/New Haven Hospital in Connecticut uncovered the fact that forty-three babies died at this one hospital when medical doctors decided they were "unfit to live" and therefore withdrew food, water, etc. (Lygre, 1979, p. 65). It hardly is surprising, then, to hear Joseph Fletcher (of situation ethics fame) suggest that any individual with an IQ of 20 or less is not a person, and that anyone ranging from 20 to 40 is only marginally so (see Lygre, 1979, p. 63). Bentley Glass has suggested that "no parents will in that future time have a right to burden society with a malformed or a mentally incompetent child" (1971).

Lest someone wonder if such things actually do occur, perhaps we should be reminded of the famous "Baby Doe" case in an American hospital (see Davis, 1985, pp. 158ff.). Physicians recommended that the newborn baby girl be allowed to die, due to the fact that, in their opinion, she was too badly deformed to live. The parents accepted that advice and the hospital staff withdrew food, water, and other reasonable care. The government stepped in to state that a violation of the baby girl's civil rights had occurred ("**life**, liberty, and the pursuit of happiness"). Ronald Reagan, President of the United States, ordered the Secre-

tary of the Department of Health and Human Services to deliver strict rules to hospitals receiving federal funds—rules which made it clear that all necessary steps were to be taken for the continuation of human life. It was postnatal manipulation that made such extraordinary governmental intervention necessary.

More and more there is a clamoring in this country to kill the handicapped, the weak, the old, the terminally ill, and others with a diminished "quality of life." Nobel laureate Francis Crick has urged that "no newborn infant should be declared human until it has passed certain tests regarding its genetic endowment and...if it fails these tests it forfeits the right to live" (as quoted in Howard and Rifkin, 1977, p. 81). Robert Cooke of the University of Wisconsin testified before a Senate subcommittee that an estimated "2,000 infants a year are dying in America because treatment has been withheld or stopped" (as quoted in Marx, 1975, p. 9). Glanville Williams, in his book, *The Sanctity of Life and the Criminal* Law, strongly advocated the legalization of both "humanitarian infanticide" and "euthanasia for handicapped children" (1957). Joseph Fletcher even has stated that we are "morally obliged" to end the lives of those who are terminally ill (1979, p. 152). William Gaylin, professor of psychiatry and law at Columbia University, declared: "...It used to be easy to know what we wanted for our children, and now the best for our children might mean deciding which ones to kill. We've always wanted the best for our grandparents, and now that might mean killing them..." (as quoted in Marx, 1975, p. 3).

The ulterior motives behind such statements can best be expressed in one word: **selfishness**. The conclusion is drawn that it would be "best for the individual involved," when in reality the person drawing the conclusion is saying, "I don't want to be saddled with the burden of a defective child, incapacitated grandparent(s) or parent(s), etc. I want to be free to 'do my own thing' without the restrictions imposed on me by another individual." Such attitudes as these are horribly wicked and must be opposed by faithful Christians. In Proverbs 24:11-12, the writer urged:

> Deliver them that are carried away unto death, and those that are ready to be slain see that thou hold back. If thou sayest, Behold, we knew not this; doth not he that weigheth the heart consider it? And he that keepeth thy soul, doth not he know it? And shall not he render to every man according to his work?

Those who are intent on ridding us of the "defective" and "malformed" would do well to read 1 Samuel 16:7:

> But Jehovah said to Samuel, Look not on his countenance, or on the height of his stature; because I have rejected him; for Jehovah seeth not as man looketh, for man looketh on the outward appearance, but Jehovah looketh on the heart.

The words of the Lord in Luke 14:13-14 also are appropriate:

> But when thou makest a feast, bid the poor, the maimed, the lame, the blind, and thou shalt be blessed; because they have not wherewith to recompense thee; for thou shalt be recompensed at the resurrection of the just.

The sanctity of life must be affirmed both prior, and subsequent, to birth. In speaking of the Judeo-Christian ethic, Eugene Diamond referred to the fact that "its tattered mantle of protection over newborn defective infants must be upheld. It is really protecting us all" (1982, p. 63). Indeed, when that ethic fails to protect the unborn, eventually it will fail to protect the child in the nursery or the elderly in the rocking chair. R.A. Gallop has addressed this very point:

> Once you permit the killing of the unborn child, there will be no stopping. There will be no age limit. You are setting off a chain reaction that will eventually make you the victim. Your children will kill you because you permitted the killing of their brothers and sisters. Your children will not want to support you in your old age. Your children will kill you for your homes and estates. If a doctor will take money for killing the innocent in the womb, he will kill you with a needle when paid by your children. This is the terrible nightmare you are creating for the future (as quoted in Waddey, 1978, p. 6).

The legalization of infanticide and euthanasia represents a Pandora's box of evils being thrust upon society. Christians must oppose such atrocities in a forthright (yet legal and non-violent) manner. John J. Davis has explained why:

> Human life is sacred because God made man in his own image and likeness (Gen. 1:26,28). This canopy of sacredness extends throughout man's life, and is not simply limited to those times and circumstances when man happens to be strong, independent, healthy, and fully conscious of his relationships to others. God is actively at work in the womb, for example (Ps. 139:13-16; Job 10:8-13), long before the human being can exercise the mental functions that secular humanists tend to see as the key criteria of value for human personality. The same God who lovingly is present in the womb can be present in the dying and comatose patient, for whom conscious human relationships are broken. The body of the dying can still be a temple of the Holy Spirit (cf. I Cor. 6:19), and hence sacred to God (1985, p. 191).

It is not an "option" for Christians to care for those who cannot care for themselves; God's Word contains specific commands regarding such actions (James 1:27; Isaiah 1:11,23; Romans 15:1; Leviticus 19:32; Psalm 71:9). Ignoring those commands, and remaining apathetic to the horrors occurring around us, invariably produces evil fruits. As Trevor Major has commented: "Euthanasia represents a natural progression from the legalization of abortion on demand. After all, if one can justify the taking of 'unwanted' or 'useless' life inside the womb, then why not take 'unwanted,' 'useless' life outside the womb?" (1991, pp. 6-7). Dr. Gallop was right—this is the horrible nightmare we have created for our future.

# CHAPTER 4

# CONCLUSION

There are parts of the scientific discipline known as "genetic engineering" that faithful Christians may both defend and employ, and in which they may rejoice rightfully. At the same time, however, there also are portions that they may neither defend nor employ, and that they must oppose. Since it is God Who "giveth life, and breath, and all things," (Acts 17:25), life becomes a sacred gift. It should be viewed as such by every human, but especially so by the Christian.

Each day brings new scientific discoveries, the large percentage of which are welcome indeed. New medicines cure or prevent old diseases. Improved techniques block pain and prevent suffering. Advancements in knowledge and methodology continually work to mankind's benefit. Suzuki and Knudtson, in their book, *Genethics*, have addressed this point.

> There is no reason to fear the stunning new conceptions of human hereditary disease now emerging from genetics research. In fact, we can rejoice that this new genetic knowledge is certain to improve the prevention, detection and treatment of many previously untreatable genetic disorders. At the same time, each of us shares responsibility for ensuring that techniques allowing the manipulation of the human genome are never exploited for arbitrary and self-serving ends or in ways that fail to consider the potential long-term consequences of large-scale genetic repair on human populations (1989, pp. 206-207).

Certainly, the faithful child of God may support most scientific advances that eliminate or cure disease, alleviate suffering, and make life better. But the Word of God remains the criterion against which every advance must be measured. I wish to reemphasize that the end does not always justify the means.

I also wish to reemphasize that with increased knowledge comes increased power. And with increased power comes the potential for misuse or abuse of that power. Some of the scenarios now being played out in the field of medical science are textbook examples of exactly that. In the distant past, technology (e.g., the use of amniocentesis) did not exist to "peek into" the womb in order to determine whether an unborn child was "defective." Today that technology not only exists, but is being used to destroy children even before their birth because they are not the "perfect specimens" their parents sought as offspring. When compared to the moral yardstick of God's Word (see Proverbs 6:16-17), the wickedness of such actions becomes evident and must be opposed by every Christian.

Further, some now are willing to "play God" in their attempts to rid the world of those who do not quite measure up to certain standards, or whose life, by those same standards, no longer is deemed worthy of living. Thus, if a deformed or retarded child is born, and the parents suddenly feel that child not worth the time and trouble to rear, they opt for "passive treatment" and ask the hospital staff to withdraw food and water—thereby ensuring the child's death. This, of course, is done under the guise of "alleviating suffering." Christian Barnard, the renowned heart surgeon, once said: "If it's playing God to stop suffering, I don't think God would mind very much" (as quoted in Marker, 1984, p. 11). What many do not realize is that it is not always the suffering of the **patient** that is under consideration, but that of the parents, friends, or relatives who will "suffer" because they are "burdened" with a "defective" child. For some, that is too much suffering to ask them to endure. And so the child's life is terminated and the parents' "suffering" is brought to an end.

Attitudes affect outcomes. When **selflessness** battles **selfishness**, the one that wins generally determines the plan of action to be taken. Numerous examples abound. But few stir the souls like the story of David Able (see Grant, 1989). Daniel and Cecelia Able married in 1971, and four years later were blessed with a beautiful, brown-eyed little boy they named Patrick. Three years later, Cecelia's doctor prescribed the drug Provera (which is known to cause potential birth defects in unborn fetuses) to aid in the regulation of her menstrual cycle. Unbeknownst to her doctor, Cecelia was pregnant at the time he prescribed the drug. During a routine prenatal examination, which included an ultrasound and X-rays, the doctor discovered that not only was the baby in a breech position (which would require birth by caesarean section), but the infant had no arms or legs. The Ables never considered abortion. Speaking of his son's birth, Daniel said:

> It was emotional. In a way, you were prepared for it. But it was also a shock. What David had was perfect and normal. It was what he was lacking that made him different. We tried not to look at what was different about him. He was a part of us (as quoted in Grant, 1989, p. 54).

Not only was he born with no arms or legs, but David had a congenital defect in the sphincter muscle connecting the stomach to the esophagus that would require extensive surgery to repair. By the age of 10, David had learned to feed himself, could draw or use a computer by holding a pencil between his teeth, and attended regular classes at Satchel Ford Elementary School in Columbia, South Carolina where the Ables live. He has a go-cart, lots of friends who play with him every day, and an award on the wall in his room for a drawing he made of the Statue of Liberty. "The Lady" is all torso, with short little legs and hardly any arms.

Why did the Ables name their boy David? "Because he will have so many giants to slay in his lifetime," said Cecelia. True. But he also will have something his biblical namesake did not—the help of family and friends in slaying those giants.

Will David's rearing place "undue burdens" upon the Ables? No doubt about it. Will they face medical bills and perhaps an uncertain future for their little giant slayer? Indeed. But has that deterred them from doing what is right? Absolutely not. And who, by their lifetime commitment, has been blessed?

David has been blessed, because he lives amidst a family that loves and cares for him. His brother Patrick has been blessed, because he has been taught, by example, altruistic love and self-sacrifice. Daniel and Cecelia Able have been blessed, because they have had to learn what selflessness is—the same kind of selflessness God forever has displayed through His love for His creation. Those around them have been blessed, because they have seen firsthand what *agape* love is all about. And I have been blessed, because a little boy with no arms and no legs has reminded me that the love of God is more important than being able to hold a dog or walk along the seashore.

In the midst of the controversy over medical ethics—a controversy that is unlikely to be resolved anytime soon—perhaps we should be reminded that this world never was intended to be our final home (Hebrews 11:13-16); our time here is temporary (James 4:14). With God's help, we can triumph over whatever comes our way (Romans 8:35-39; Psalm 46:1-3), and understand that whatever befalls us in this world is "not worthy to be compared with the glory which shall be revealed" (Romans 8:18).

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